**Name: Date:**

**Task 5**

**Analyse energy audit data**



**• Identify energy usage within the scope of the ICT project and provide a detailed report**

**• Estimate potential energy savings and payback periods for recommended actions**

Detailed report - SD-KPI 1: Energy usage / CO2 emissions

• Energy efficiency of IT products is a key to reach Kyoto target.

• Does the company look for and propose progress on this issue?

Potential energy savings and payback periods for recommended actions e.g.

• IT architecture

• Hardware efficiency

• Software power management

|  |  |  |  |
| --- | --- | --- | --- |
| **Hardware** | **Cost** | **URL** | **Average power** |
| Server | $500 | Generic | 45 watts idle |
| Switch 24 Port TP Link TL1024d GigaBit | $74.50 | www.digistar.com.au | Idle 7 -8 watts (2 thin clients attached) |
| Thin Client x 1  Wyse SE3215 | n/a – Est. $40 | www.partstore.com | 9 watts (each) |
| Modem/router  Netgear | $176 | www.pcworld.idg.com.au | 6 watts + 1watt for dongle |
| Printer Lexmark Z12 | $25 | www.ebay.com.au | Idle 8 -16 watts |
| Monitor hp compact FP5315 x 2 | $25 | www.ebay.com | 18 watts (each) |
| Thin Client x 1  Ultra Thin Y210 | $74.21 USD | www.aleixpress.com | 7 watts (each) |
| TOTAL | $914 |  | 152 watts (Server + 2 thin clients + 3 monitors+ printer)  COST $0.86 per day |
| TOTAL (estimated) | $2236 |  | 1000 Watts (Server + 20 thin clients + monitors +printer)  COST approx.$7 |

… making IT Infrastructure more efficient reduces the electricity needed to run computing and telecom equipment, the cooling needed to keep facilities at the right temperature, the energy used to build the systems, the resources consumed to build-out new facilities, and the electronic waste that results from equipment disposal.

**Research:** **Sustainability in Information Technology at:**

<http://www.epeat.net/>

<http://sustainablestanford.stanford.edu/sustainable_it>

Answer the following:

1. **Who is EPEAT? The Electronic Product Environmental Assessment Tool (EPEAT) is a method for consumers to evaluate the effect of a product on the environment. It is assessing lifecycle environmental standards and ranks products as gold, silver or bronze based on a set of environmental performance criteria.**
2. **Explain the EPEAT Gold, Silver and Bronze standards: to receive basic EPEAT rating a product must meet all 8 selected criteria, to be granted additional EPEAT ratings the product must meet 50% of the optional criteria for silver and 75% for bronze ratings.**
3. **Give an example of a PC /Monitor meeting EPEAT Gold: ASUSTek VH196T-****P**
4. **Give an example of a PC / monitor meeting EPEAT Gold: DeLL VOSTRO 3560**
5. **Explain the new green labeling brand from EPEAT called ‘EcoSense’ : Eco Sense' is the consumer focused side of EPEAT. Designed to help everyday consumers with choosing products.**
6. **Explain the new mandatory environmental standards for ICT procurement by the Australian Government: Procurement now must include compliance with ISO 14021 at the EPEAT Silver level as a minimum. Product take back must be in place this includes mobile devices, toner and computers for recycling. Also packaging of the equipment must be covered by the NPC (national packaging covenant or comply with the nation environment protection measure.**
7. **Provide a detailed report on** **energy usage within the LAN case study for each class of hardware:**
   1. **Common Equipment – Server, modem/router, switch**
   2. **Desktop Equipment- Thin Clients, monitors**
   3. **Printing Equipment – Inkjet printer**

|  |  |  |  |
| --- | --- | --- | --- |
| **Common Equipment** | **Average Energy** | **Proportion of Total** | **Annual CO2 Emissions** |
| **Common Equipment** | **60 Watts (Router + Server + Switch)** | **46%** | **N/A** |
| **Desktop Equipment** | **52 Watts (2x Thin Clients + monitors)** | **41%** | **N/A** |
| **Printing Equipment** | **16 Watts (1x printer)** | **13%** | **N/A** |

1. **What strategies has Stanford University used to reduce energy usage for each class of hardware? For desktop hardware they have began running backups during the day, turning off equipment when not in use, purchasing EPEAT Gold equipment. For server equipment they have again purchased EPEAT gold equipment and have begun using virtualisation where possible. Printing – using double sided paper and once again EPEAT Gold equipment and power saving technologies.**
2. **Recommend actions for each class of hardware for** **the LAN case study**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Class of hardware** | **Recommendation/s** | **Potential energy savings** | **Cost** | **Payback** | **Assumptions** |
| Common Equipment | **Newer equipment.** | **20 – 50%** | **$1500** |  | **1** |
| Desktop Equipment | **Newer thin clients** | **50%+** | **$427 each** |  | **2** |
| Printing Equipment | **Get newer printer** | **30 – 50%** | **$330+** |  | **3** |

**Assumptions**

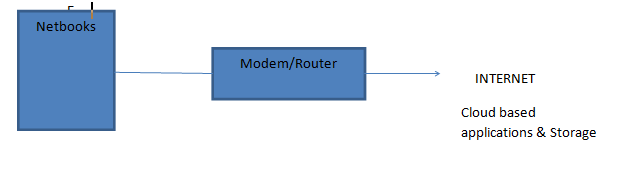
**1. Current Thin-client technology is more energy efficient. 13Watts or less and ability to use POE to power device.**

**2. Current and future tech has reduced energy consumption such as server , router and switches.**

**3. Current and future printing technology will allow better power consumption during operation and also during off peak times.**

===================================================================================

Practicum - Measure the Desktop power consumption for a Web client for a small school:



|  |  |  |
| --- | --- | --- |
| Condition | Web Client  1 | Web Client  2 |
| ID/Serial No: | Y210 | Lennovo 8172-LMS |
| off | 0 | 1.5 |
| Max boot | 14 | 150 |
| idle | 12 | 135 |
| W/P | 12 | n/a |
| Internet | 13 | 131 |
| Music | n/a | 143 |
| Video | n/a | 143 |
| Monitor | 18 | 18 |

Recommend a ‘Greenn’ printer for a small school:

URL: http://www.office.xerox.com/printers/color-printers/colorqube-8570/enus.html

Examples:

* Replace Server HDD with SSD
* Replace server MB with high performance quad core 32GB RAM with capacity for 64+ thin clients
* Replace monitors
* “green” printing
* “cloud” services

**Best Practice Sustainability at Work**

**Innovative IT Technologies reduce infrastructure and conserve energy**

* According to a May 2007 report from Cisco, packet voice networking costs only 20 to 30 percent of an equivalent circuit-based voice network. Unified messaging services allows the consolidation of fax machines, video conference rooms and voicemail systems into a single platform, with infrastructure cost savings of as much as 40%.
* Lyra Research states that usage of converged network copier-printers products allows equipment consolidation, reducing the number of output devices in a typical corporation by up to 60%. In addition, IT departments are freed from supporting diverse types of printers. Hewlett-Packard‘s Neoware thin client computing solutions announced that its devices can help companies reduce computing-related energy costs by up to 90 percent.
* <http://www.greenit.net/solutions_enterprise.html>